POLICY CONSIDERATIONS FOR THE IMPROVEMENT OF THE UNITED STATES NAVY MINE WARFARE CAPABILITY

William Alan Gaffney

NAVAL POSTGRADUATE SCHOOL
Monterey, California

THESIS

POLICY CONSIDERATIONS FOR THE IMPROVEMENT OF THE UNITED STATES NAVY MINE WARFARE CAPABILITY

by

William Alan Gaffney

Thesis Advisor: J. W. Creighton

March 1973

Policy Considerations for the Improvement of the United States Navy Mine Warfare Capability

by

William Alan Gaffney
Lieutenant, United States Navy
B.S., United States Naval Academy, 1967

Submitted in partial fulfillment of the
requirements for the degree of

MASTER OF SCIENCE IN MANAGEMENT

from the

NAVAL POSTGRADUATE SCHOOL
March 1973

ABSTRACT

The general purpose of the paper is to indicate the importance of the role of mine warfare in supporting the nation's defense policy and, ultimately, the nation's political policy. The basic problem, a lack of attention and emphasis of mine warfare on the part of persons in positions of decision in the defense establishment, is treated in the opening sections as a prelude to describe the need for such a paper.

Future scenarios for mine warfare employment are developed to illustrate the importance of the mine and some of the possible areas where it may be used. This point is further discussed in relation to the mine's role as a political weapon as well as that of a strategic and tactical weapon. This line of thought is expanded through a discussion of the weapon's value as a deterrent and as a defensive weapon.

Finally, a design is offered for a future Mine Force with a much broader range of capabilities and exposure to Fleet activities. This section includes suggestions as to the reasons for the design, and beyond that, the areas that require emphasis to give the mine's capabilities the needed exposure to the proper echelons of the defense establishment.

TABLE OF CONTENTS

I. INTRODUCTION

A. SCOPE

In late 1971, Project Mine-9-73 was formed under the auspices of the Naval Scientific Advisory Program (NSAP) as requested by the Commander, Mine Warfare Force, "to examine the mission, tasks, and functions of the Mine Warfare Force, and to ascertain whether the current administrative and task organizations of the Force were optimum to fulfill the requirements." [Ref. 30]

The approach of the study group[1] was to interview various members of the mine warfare community to obtain information as to the current organization and internal relations of the various Force elements. Members of the Mine Warfare Force staff (with the exception of the Commander, Mine Warfare Force), were interviewed to ascertain their feeling as to the roles and functions of the Mine Warfare Force. The product of these discussions led to the drawing up of a tentative list of ten major policy issues (Appendix A). In addition, the anticipated maximum and minimum extremes for positions on the issues were included as an aid in accessing future interview

---

[1] NSAP Project Mine-9-73 Study Group: Chairman: Dr. John W. Odle, of the Naval Ordnance Laboratory, Silver Springs, Maryland. Mr. James Callahan, of the Naval Scientific Research and Development Laboratory, Panamy City, Florida. Dr. John W. Creighton, Professor of Management, U.S. Naval Postgraduate School, Monterey, California.

responses in this area. During subsequent interviews, the responses to these ten issues were used as a basis for comparison of the views of the various personnel interviewed.

Follow-on interviews were held with the following groups and individuals: the Deputy Commander, Mine Warfare Force/Commander, Mine Flotilla Three and his Staff; the office of the Program Manager, Nineteen (PM 19) of the Naval Material Command; Op 0325, the mine section of the office of the Assistant Chief for Surface Operations, on the Staff of the Chief of Naval Operations; Rear Admiral James A. Dare, USN(ret.), the first and former Commander, Mine Warfare Force; and Professor Carl E. Menneken, formerly Dean of Research, United States Naval Postgraduate School, and Chairman of the Mine Advisory Committee for the National Academy of Sciences.

The interviews were supported by independent study of documents and reports on the subject of mine warfare. The major contributing document was the report, Project NIMROD [Ref. 15], written by the Mine Advisory Committee (MAC)[2] under the direction of Professor Menneken. Information was also derived from a recently completed study report on

---

[2] The Mine Advisory Committee of the National Academy of Sciences - National Research Council, operating under the sponsorship of the Office of Naval Research, has its membership drawn largely from the academic community. The committee was formed in 1951 to act in an advisory capacity with its primary concern with the technological aspects of the Navy's mine and mine countermeasures programs.

airborne mine countermeasures, prepared by the Mine Advisory Committee. Finally, further information pertaining to the present Mine Warfare Force was obtained through the study of notices and instructions of the Command.

Although much of the information for the thesis was obtained during sessions with the NSAP study group, it is not intended that the thesis be a duplication of the study group's report. It is rather, a look beyond the limits of the organization within the Mine Warfare Force to the larger context of mine warfare as a supporting element of the nation's defense structure.

B. OBJECTIVES

The basic thesis of this paper is that mine warfare and the Mine Warfare Force within the United States Navy, although highly regarded in some circles, suffers from the lack of exposure to and close attention from the highest echelons of the defense establishment. It is, therefore, the general purpose of this paper to indicate the importance of the role of mine warfare in the supporting of the nation's defense policy and, ultimately, the nation's international political policy.

The objectives of the thesis are threefold, as follows:

1. To indicate the need to apply some fundamental concepts of policy management to the problem of developing goals and policies for the Mine Warfare Force that best support the defense structure and national defense policy.

2. To act as a catalyst for further discussion and consideration for the role that mine warfare should play within the structure of national defense.

3. To introduce the need for some definitive action on the part of the mine warfare community toward advertising the importance of establishing and maintaining a mine warfare capability commensurate with present and future threats.

The arguments supporting these above objectives are developed throughout the paper, and are outlined here for the convenience of the reader.

The NIMROD study discusses some of the various peculiarities of mines and mine warfare, which make it stand alone in the defense structure and cause the Mine Warfare Force to act as a separate element of that structure. As such, the policies and objectives of the Force must act in such a way as to support the goals of that structure. As an aid in developing this point, the concept of a network, or pyramid of objectives is discussed as a means of introducing the need to identify the relationship of the Mine Warfare Force to the overall defense framework.

The advantages and disadvantages of the weapon as well as an introduction to the various scenarios for its future employment are developed to assist in understanding the impact the weapon could have in future international conflicts. Some of these scenarios have basis in fact,

while others are products of conjecture on the part of the writer or of the various persons interviewed.

Upon grasping the idea of the Mine Warfare Force as a supporting element of the entire defense structure, the emphasis then shifts to the question of the proper size and makeup of a Force required to support the goals. Although not enumerated to the point of identifying specific numbers of billet assignments and personnel, the need for the identification of an acceptable minimum force level is discussed.

Decisions as to the size and design of the Force must be tempered with the knowledge of the threats and capabilities required to meet these threats, both present and future. Therefore, some discussion follows as to the present threats and mine warfare capabilities required to meet these threats, as well as scenarios to describe future threats. Finally, one possible design for an effective Mine Force is presented for consideration and discussion.

C. BACKGROUND

1. Mine Warfare - Historical Development

Mine warfare had its beginnings in the early nineteenth century in France, England, and later in the United States with demonstrations by Robert Fulton and Samuel Colt. These first demonstrations, although impressive, did not influence the military to accept the use of mines in naval warfare. "The first practical and significant

use of mines was by the Confederate States in the Civil War. The Confederates, correctly advised and finally convinced by Matthew Fontaine Maury that the only defense of a nation with a vast coast line but without a navy lay in the use of mines, employed them with a vengeance and with notable success." [Ref. 15, p. 17]

The development of mines progressed rapidly from that time throughout the world. Mine warfare became an effective means of destroying shipping. The mines of the present are highly developed, powerful weapons with a variety of detonators and timing devices available for selection by the user. Thus, the user may design the weapon to fit each individual situation.

The Hague Convention of 1907 was convened for the purpose of inserting some formal restrictions on mine warfare into international law. The result was a series of articles (Appendix B) restricting their use under various circumstances. Perhaps the most important of these articles was that having to do with the clearance of mines by those powers that lay the mines.

This tennet of international law has prompted the side-by-side development of mine clearing capabilities to balance the mine laying capabilities. The reluctance on the part of at least some commanders to consider mines as

a viable alternative in their "bag of tricks,"[3] indicates a lack of confidence in mine clearing technology at present. Perhaps one reason for the long overdue use of mines in North Vietnam could be this same feeling among even the highest of echelons.

Mine warfare technology can be divided into two distinct facets of operation. First, pro-mining or mine laying operations in which a few or many mines with various detonators are laid in pre-determined patterns and locations to act as either a defensive barrier from attack or as an offensive blockade, to enemy shipping. Included as a part of this facet is the function of mine planning, under which all contingencies of fields are laid out in detailed operational orders and stored away for possible future use.

Second, is the function of mine clearing or mine countermeasures operations, in which either self-sewn or enemy-sewn mine fields are neutralized to offer safe passage of shipping. Combined with this are the various mine hunting (locating) techniques and the methods of neutralizing the various type of mines.

Finally, the functions of mine maintenance, personnel training, and research and development of new

---

[3] This concept of the mine as a viable first strike capability was first mentioned in discussions with Rear Admiral James A. Dare, USN (ret.) during interviews with him on 15-16 January 1973.

techniques and equipment must all be included as a part of any total mine warfare effort. Mine maintenance, in turn, includes the periodic checks that must be accomplished by specially-trained units. These units are further charged with the assembly of separately stored detonators and main bodies of the mines in the event of the deployment of the mines.

2. Mine Warfare Force - Present Organization (Appendix C)

The present make-up of the United States Navy's Mine Warfare Force is headed by the Commander, Mine Warfare Force who is the successor of the former commanders of the separate mine staffs for each coast (Mine Pacific, Mine Atlantic). The recent (1971) unification of the mine forces was a move toward a more economic and efficient use of resources.

The Commander, Mine Warfare Force, heads a staff composed of the normal seven sections of all Naval staffs (N1 through N7), and acts as the Type Commander for the three afloat mine flotillas based throughout the world. In addition, he acts as the reporting senior for the separate activities described below:

1. Mobile Mine Countermeasures: (MOMCOM) Basically, a command and control group for surface and air mine countermeasures forces. They are charged with the laying out of sweeping patterns and monitor the operation from beginning to end. The helicopter squadron involved in airborne minesweeping

operations, although controlled by MOMCOM during operations, reports the Commander, Naval Air Forces Atlantic for administrative purposes.

2. Mobile Mine Assembly Group: (MOMAG) This group is charged with all the maintenance and upkeep of all the mines held in the various depots and aboard some ships throughout the world. Responsibilities include the routine checks and maintenance done on a rotating basis by the several detachments of this group.

3. Mine Force Support Group: (MFSG) This unit provides administrative, logistic and repair support for units of the Mine Force. It also maintains certain specialized minesweeping equipment for the Mine Force.

The Commander, Mine Warfare Force reports to the Chief of Naval Operations through the Pacific and Atlantic Fleet Commanders, for both operational and administrative matters. His units are deployed in the areas of concern of both these Commanders.

Finally, mine desks are located within the staffs of both the Chief of Naval Operations (OP 0325) and the Chief of Naval Material (PM 19) for operational coordination and procurement functions, respectively.

D. THE NATURE OF THE PROBLEM

When the Mine Advisory Committee began working on the Project NIMROD study, it became aware of a general theme

that seemed to run through the mine warfare community. This theme is expressed in an opening introduction to the study's report.

> "...many responsible persons in the mine warfare community were strongly of the opinion that this area of naval warfare did not receive the attention or emphasis they considered warranted. In fact, this was one of the factors which motivated the study. During the course of the effort this feeling was not only strengthened, but widened by the realization that many persons in positions of decision, even within the Navy, did not understand the characteristics of mine warfare, or its underlying principles. Few fully appreciated that in addition to being a highly cost effective[4] weapon of attrition, the naval mine possesses the ability to simulate shoaling in any desired degree and time interval in virtually all navigable waters (i.e., in effect, to convert navigable water into land). As a result, the full potential of the underwater minefield as a military weapon is not fully and widely appreciated. The consequence is that the use of mines is not exploited

---

[4] The NIMROD study addresses this topic at length, in Chapter VI of the report [Ref. 1, Pp. 207-241]. It discusses the present methods of determining the weapon's cost effectiveness and the various measures of effectiveness used. Also included are some recommendations for improving the techniques involved in deriving these measures.

and mining does not fare well in the competition for facilities, personnel and funds." [Ref. 15, p. 3]

Over four years later, the same theme seems to run through the conversations and interviews held with members of the present day mine warfare community. The factors contributing to this attitude seem to be of the same general nature, with few exceptions, as those disclosed in the NIMROD study earlier. Among these are the following main points:

1. Duty within the mine forces is looked upon by many officers as non career enhancing. Generally, surface warfare officers opt for the more glorious, all-round experiences offered aboard Destroyers. The only exception to this is the coveted billet of Commanding Officer of an ocean-going mine sweeping vessel. This requires early selection for command as a Lieutenant, and coupled with the recent severe reduction in mine sweepers, offers a career officer an excellent chance for further advancement in the Navy.

   The experience derived in this position however, is not coveted for its mine warfare aspects, but for its command-at-sea responsibilities. Upon completion of his tour as a commanding officer, this highly-qualified junior officer usually returns to the Destroyer Forces, never to return to mine warfare duties again. Rarely does this

officer continue in mine warfare related billets ashore or afloat during the remainder of his career.

2. Mines and mine warfare are not identified with any specific delivery vehicle. A variety of vehicles are used that range from Air Force heavy bombers to nuclear submarines. The military officer tends to identify his career with a vehicle rather than a system or area of expertise. For instance, naval officers refer to themselves as destroyermen, jet jockeys, or submariners, rather than as anti-submarine warfare specialists or mine warfare specialists. The appeal of mine warfare as a career specialty is therefore rather low on the list of preferences.

3. Generally, no immediate impact can be seen with the use of mines as can be seen with the use of weapons such as torpedoes or bombs, and others with relatively prompt assessment of the effectiveness. The effectiveness of a mine field can only be measured over long periods, and the indirect effects may never be known. The lack of "bang" appeal, therefore, contributes to the weapon's demise as an unpopular, and consequently unsupported weapon.

This continuing theme indicating a general lack of knowledge and appreciation of the mine as a cost effective

weapon implies an obvious inability of the mine warfare community to conduct an as yet effective campaign to change this attitude. The Mine Force continues to be relegated to the role of an adjunct to amphibious operations and anti-submarine planning, with little regard to its value as a strategic weapon against general shipping operations. The weapon's recent use in Vietnam, may well herald a new era in the general acceptance of mine warfare as an important alternative in various scenarios of war.

Mine Warfare's present position of acclaim is tenuous, and for some of the same reasons as in the past, it may again slip to a position of disuse. A major campaign is needed, aimed toward educating the various arms of the Navy and even the higher echelons within the defense establishment as to the merits of the mine and the impact of mine warfare. This campaign would have as an objective the importance of maintaining an effective mine warfare capability and would serve to avoid the slippage of capability that seems destined to occur as the completion of mine clearing operations in Vietnam draws nearer.

The policy and goals for the Navy's Mine Warfare Force must be in line with the Navy's overall goals and the nation's defense policy. If mine warfare can also be considered a weapon of political importance, then these goals must also be brought into line with the nation's political policy. The establishment of a policy toward the development and maintaining of an effective mine warfare

capability must therefore be discussed at the highest levels of the defense establishment. Finally, an effectiveness measure needs to be assigned for each of these goals as well as a method of developing the measure.

II. FUTURE SCENARIOS OF MINE WARFARE EMPLOYMENT

An understanding of possible future employment of any warfare capability must be grasped before planning and the setting of objectives can proceed. The following discussion of some of the possible future scenarios in which mine warfare may be expected to take an active part, should point out both the importance of the weapon and its place in the defense structure.

A. LIMITED WARFARE

The mining of North Vietnamese harbors and their approaches by the United States set an important precedent for future international confrontations. When one considers the fact that U.S. Forces were conducting offensive operations in a formally undeclared war, various scenarios come to mind in which this same action might be carried out by forces other than those of the United States.

The effectiveness of the mine fields in North Vietnam is not measured in terms of the number of ships sunk or damaged. Rather, it is measured in terms of the amount of tonnage deterred from entering the harbors via the normal sea routes. One measure of effectiveness could be based on the completeness of the blockade for preventing the delivery of badly needed war materials to the North Vietnamese.

In any event, the fact that shipping was halted points to an apparent one hundred percent effectiveness for the fields in North Vietnam. History will undoubtedly record this mining effort as a major factor contributing to the eventual signing of the peace agreement in January, 1973. Furthermore, this apparent effectiveness of the field, coupled with the type of conflict it was deployed in, have resounding consequences in the manner in which mining operations may be used in future confrontations.

B. INTERNATIONAL TERRORIST ACTIVITY

One can envision an announcement by any one of a number of third-world nations that one of its freighters has deposited an undisclosed number of mines into a major harbor as it sailed out of that port. A type of international blackmail, possible economic havoc, disruptions of port activity, to say nothing of the embarassment dealt upon the nation involved, would be the ensuing result. This would be further compounded should the nation's naval forces be unable to respond to the occasion with an effective mine countermeasures capability.

The retaliating nation would be rash to consider offensive retaliation aimed at the aggressor without first feeling the pulse of world opinion as to the proper consequences of such a mining action. In light of the precedent set by the United States in Vietnam, world opinion might well be one of firm hostility towards any offensive

military retaliation. The retaliation might more appropriately take the form of a formal diplomatic measure, rather than any form of military action.

C. ECONOMIC DISRUPTIVE ACTIVITY

If such mining action could even be considered an action that might not precipitate aggressive retaliation, then the mine could be considered a weapon of international terrorism and political blackmail as well as a weapon of warfare. This presents the possibility of its use by almost any belligerent nation that sees some advantage in blocking strategic shipping routes, harbor areas, navigable rivers, etc. The blocking of such trade routes would have tremendous impact on the shipping trade and could seriously hamper some industries dependent on shipping. The effect of the closing of the Suez Canal on the oil industry due to the necessary change in the routes for shipping crude oil and the additional costs and time involved in shipping via these routes, serves as a prime example of this impact.

Mine warfare, by its very existence as a viable, cost effective weapon, and its relative ease of delivery from a variety of craft, suggests that a strong pro-mining capability will be developed by smaller, third-world nations in the future. This development would greatly increase the chance that mines will be used in the future by these less powerful nations to neutralize the power of

larger nations such as the United States by inflicting severe shipping hazards. Their use in these limited conflicts could easily affect world trade if the mine fields were located in heavily traveled areas such as the Straits of Gibraltar or the approaches to the Panama Canal. These shipping hazards would not have as much affect on the Russians however, who are not as dependent on sea routes nor international trade.

D. POLITICAL IMPLICATIONS

The necessity for an effective mine countermeasures capability is clearly evident when one considers that a requirement to clear mines is apt to occur as a result of the above actions. Furthermore, the United States Navy might be called on by the government to clear mines from various ports in the Middle East that had become blocked by mines during confrontations between the various belligerent nations there.

Recently, the requirement to clear mines from East Pakistani harbors was levied on the Russian Navy after an agreement by its government that it complete this job. Had political motives of the United States been served by it, this task may very well have been assigned to the United States Navy. The point is then, that the international political arena dictates that a strong mine clearance capability be maintained by the Navy.

III. DEVELOPING A POLICY FOR MINE WARFARE

A. A NETWORK OF OBJECTIVES

If the goal of the national defense structure is to effectively support national political policy, then each of the elements of the defense structure must select goals that also serve to support this policy. There are no policy decisions then, that can be considered purely military in nature, since any military decision affects political policy. Political, as well as military ramifications must therefore be considered in the setting of any defense policies.

Perhaps the best method for illustrating the above concept, is by a pyramid of objectives and policies. The pinnacle of the pyramid is the uppermost national defense goal. The entire pyramid supports the pinnacle of the pyramid as must all the goals, aims, objectives, and policies within the national defense structure support the overall national defense goal.

Just as the pyramid is built in layers, each layer acting as a support for the one above it until the pinnacle is reached, so must each level of objectives be supported by a lower level of subobjectives which are supported by sub-subobjectives and so on down to the lowest level--the foundation. The objectives of any element

of the defense structure, therefore must be supported by subobjectives and sub-subobjectives of that element.

The foundation is formed of immediate, short range goals of the individual elements of the defense structure. In the case of the Mine Warfare Force, these short-range objectives take the form of its Force Improvement Program (FIP).

The Mine Warfare Force's Force Improvement Program is designed to bring forth improvements of the Force from suggestions from within the Force. These suggestions are initiated at the assistant chief of staff level, and submitted to the chief of staff for the Commander, Mine Warfare Force for consideration, and approval or rejection. The approved suggestions are then discussed in bi-weekly sessions of the FIP Advisory Board.

To consider the Mine Warfare Force's Force Improvement Program as anything other than a short-term objectives program would be a mistake. The Program serves as a means of batching many rather short-term projects, concerned with very specific and narrow goals, into one large program. The control exercised over the projects, and the interrelationship of the projects, is designed to aid the transfer of information and methodology among the various programs.

Since the projects are interrelated and are all of the same general level of importance and scope, they are considered to be supportive of one another through a common

transfer of knowledge rather than through mutual requirements for support. The FIP projects can therefore be thought of as being on the same objective level.

It is presumed that one of the major decisions to be made by the chief of staff and the FIP advisory board in approving the various suggested projects is that they are in line with stated overall objectives of the Force. Following the concept of the pyramid of objectives, this would be, of course, a necessary prerequisite since these lower level, short-term objectives would be supportive of higher level objectives within the pyramid structure.

Another aspect to this pyramid illustration is the range of the objectives at the various levels of the pyramid. Generally, the higher levels of the pyramid contain the long-range objectives to be supported by the more specific mid-range objectives of the middle levels. These are, in turn, supported by the short-range objectives near the base of the pyramid. The Mine Warfare Force, as an example, would see its major, long-range objectives near the top of the structure in support of the long-range objectives of the defense structure. They are then supported by mid-range and, finally, short-range objectives of the Force Improvement Program at the lower levels of the structure.

The above, describes one method to be used in the forming of policies and objectives for an organization. The two main points to consider in making policy then,

are the interrelationships among objectives and the fact that each lower level objective must be in support of some higher level objective. Keeping these points in mind, setting the objectives of the organization and deriving the plans to support these individual objectives, can then be carried forward.

B. THE PLANNING EFFORT

In considering the best approach to long-range planning in support of policies and objectives of an organization, it is necessary to have in mind some basic premises of corporate planning. George A. Steiner, in his book, Top Management Planning [Ref. 9] outlines the three underlying foundations of any corporate planning effort. These foundations are of a general enough nature that they can ultimately be applied to elements within the defense establishment as well as in civilian corporations. They are discussed here to illustrate their possible application in deriving long-range objectives and long-range planning for the Mine Warfare Force as an element within the overall defense structure.

Steiner writes of the three underlying foundations of any company planning effort: fundamental organizational socio-economic purposes, values of top managers, and studies of the environment. These concepts are discussed in the context of use in commercial business enterprises, however they have application in the military and government as well.

He refers to "those underlying ends which society expects of its business institutions if they are to survive" [Ref. 9, p. 32] as the socio-economic purposes of business. "At the rock bottom this means that society demands that businesses utilize the resources at their disposal to satisfy the wants of society." [Ref. 9, p. 32]

In considering socio-economics as an underlying foundation of the military planning effort, thoughts as to the effect public opinion has had and is likely to have on the size and structure of the military certainly loom into mind. The most recent examples of public opinion that have led to high-level concern and action in our government are:

1. The call for an end to the Draft and the subsequent decision to go to an all volunteer military.
2. A desire by much of the general public, and stated campaign promises of certain politicians for a return to isolationism.
3. A public and Congressional demand for a slimming of the Defense budget.
4. The call for the balance of payments, resulting in a cutback in overseas military spending and bases.

The idea of totally voluntary armed forces can in some respects, be considered a result of public opinion against involuntary induction. This, in turn, has meant a slimming of the various Services both in the reduction of the number of personnel, in order to insure a manning level commensurate

with an all volunteer military, and the slimming of the portion of the tax dollar spent on defense. Finally, a general concern for the reduction in the number of troops stationed overseas and a call for a balance of payments has prompted a draw down of troops in some overseas areas.

A volunteer military, a slimming of the budget, and a call for a reduced commitment at overseas bases are all a part of the socio-economic foundation that must be considered in any long-range planning effort of the defense establishment.

Steiner iterates the second underlying foundation of corporate planning as the values of top managers. By this he refers to the values, ethics, and philosophies that high level management adhere to and that ultimately permeate their thinking in any planning that is done. This same point can be made for the leaders in the military who set the policies the defense establishment follows.

Preconceived areas of responsibility and levels of accomplishment for the various elements of the defense structure tint the thinking and the planning done for future contingency operations. That is to say, that past performance by some military element is the indicator for future capabilities of that element. Planning for future contingencies must take these expected capabilities into account in deciding on the roles to be played by that element in future conflicts.

Although the above is not quite what Steiner had in mind when he spoke of the values of top managers, it seems to apply when considering top-level military management.

Steiner's final underlying foundation of the corporate planning effort is as follows:

> "A cardinal purpose of planning is to discover future opportunities and make plans to exploit them. Correspondingly, basic to long-range planning is the detection of obstructions that must be removed from the road ahead. The most effective plans are those which exploit opportunities and remove obstacles on the basis of an objective understanding of the strengths and weaknesses of the company." [Ref. 9, p. 33]

This last statement probably more nearly follows along the line of military thought than do the preceeding statements on planning fundamentals. The estimate of the threat, so often stated in military long-range planning doctrines, is basically the same idea as Steiner's detection of obstructions and obstacles to future plans.

A military estimate of the threat identifies the strengths and weaknesses of the enemy, that can later be exploited in an attempt to overcome the enemy obstacle.

The final analysis of corporate planning fundamentals as applied to the military then points out three underlying

points that must be considered in any future military planning. They are:

1. The socio-economic purposes of the military in supporting national political policy, and the effects of public opinion on these purposes.
2. The values of top military managers as applied to the preconceived notions of the capabilities of the various elements of the defense structure.
3. The estimate of the strengths and weaknesses of the threat and its effect on applying military elements to counter the threat.

Keeping these fundamentals and their application to military planning in mind, a basic design for an effective Mine Warfare Force can be discussed.

C. THE POLICY MAKERS

If the illustration of a pyramid of objectives can be accepted, the decision as to who sets the policy at the various levels of the defense structure must now be looked at and considered. In relation to the Mine Warfare Force, policy direction comes from several sources for the various aspects of mine warfare (mine planning, pro-mining and mine countermeasures operations, operational planning, new systems procurement, and research and development). Some of these aspects, such as planning and operations, overlap, and the Force therefore receives direction in some areas from more than one source at a time.

Presumably, direction on operational matters, including mine planning, filters down from the office of the Secretary of Defense, via the Joint Chiefs of Staff (through O-3, operations, and O-5, plans sections), and the Chief of Naval Operations (OP-0325 in the Surface Operations Section), to the Atlantic and Pacific Fleet Commanders before arriving at the Mine Force level. Each of these levels may have some input to add as further direction for the Commander, Mine Warfare Force. Furthermore, the staffs for amphibious, submarine, and anti-submarine warfare on both coasts generally are consulted when operational plans for mining overlap their areas of interest. Finally, the Chief of Naval Material contributes in the areas of procurement and new systems development through the office of PM-19.

Long-range policy planning for the Mine Force is then done by the Commander, Mine Warfare Force and his staff having received direction from several areas and levels of the defense structure. It is at this level then, that long-range as well as middle and short-range plans are established for the Mine Force. Therefore, either the necessary knowledge concerning the political, as well as military impact of the weapon must rest at this level or the plans for the use of the weapon become of rather limited scope.

One other level in the defense structure might be considered as the level with some import in the planning of long-range goals for all areas of the structure,

including the Mine Force. The plans section of the Joint Staff is charged with defining plans of the nature and time frame of the long-range plans being discussed here, and could be considered as contributors to the long-range planning for mine warfare done by the Mine Force.

This level of the defense structure seems appropriately situated to formulate the long-range policies of the Mine Warfare Force in its context as an element of the entire defense structure. More importantly, as a member of the Joint Staff the plans section is in a position to develop mine warfare plans with a united command point of view.

The argument for active participation by the highest levels of the defense establishment becomes evident as one gains a persepective for the weapon in relation to others in the defense arsenals. This is best accomplished through a discussion of the type of weapon category the mine must be placed into.

D. THE MINE AS A TYPE OF WEAPON

1. Deterrence Vs. Defense

Weapons tend to become categorized as to their value as deterrent or defensive weapons. In considering just where the mine fits in this categorization, it is first necessary to gain a clear understanding of how the two categories are defined.

Perhaps the characteristic that best indicates the contrast between the two types of weapons is the

relative time of their employment. A deterrent weapon implies that it is employed prior to a first-strike by an agressor, to act as a deterrence to that aggression. A defensive weapon, on the other hand, is actively employed at the time or shortly after the time of the first-strike by the aggressor.

The defensive weapon is intended to fend off an attack by striking at the weapons or personnel employed in the attack. A deterrent weapon, on the other hand, is intended to discourage the enemy from making any attack at all. It stands poised and ready as a very real deterrence to an aggressor's force.

The mine has long been considered a defensive weapon in that it can be used to keep unfriendly ships from traversing charted mine fields, while friendly vessels, supplied with accurate charts of the mine field, pass in and out of the field in safety. This advantage of mining has been extensively used in the past, and future planning tends to take this form, at the neglect of other possible uses for the weapon.

In many respects, the mine can act much as nuclear weapons in providing a very real deterrence for prospective aggressors. If the capability to covertly lay a mine field exists, or if the enemy can be led to believe it exists, then this capability and the mine become of great deterrent value.

It can safely be concluded then, that the mine has certain unique characteristics of delivery, timing, and cost that make it a weapon of both defensive as well as deterrent value. Any long-range planning of mine warfare in the United States Navy, must take this dual value into account so that this weapon can be used most effectively.

2. Strategic/Political Value

It should be clear at this point that the mine is more than just a weapon of tactical significance. Preceeding statements as to the manner in which it is employed and the various conditions under which it is employed indicate that the mine is a weapon of strategic as well as tactical significance. The capability to employ or clear mines in all areas and under varying conditions of conflict ranging from the overt conflict of a limited war to the political confrontations such as the kind experienced during the Cuban missile crises, lend credence to the mine's value as both a tactical and strategic weapon.

The political importance of mine warfare becomes obvious when one considers the role mines could have played in a confrontation such as the Cuban missile crises. Short of the actual laying of a mine barrier, the simple act of hinting at such a capability would most probably have had the same effect the naval blockade finally had, but with much less expense and less display of force.

One can further conjecture at the part the mine fields and their clearance played in the discussions leading to the final agreements between the United States and North Vietnam. Certainly, the mine field played a vital role in causing the North Vietnamese to begin serious negotiations toward a settlement. These same mine fields then undoubtedly were used as effective levers by the United States in negotiating the actual settlement of the dispute. In this way then, mine warfare played a dual role as military weapon and political lever.

The point that is being made is that the mine could be a weapon of considerable political influence, and a more flexible utilization of mines to achieve political objectives needs to be urged. The interesting suggestion to do just this was advanced in a study done on strategic bombing and was quoted in the Project NIMROD report as follows:

> "Although no particular incident in the war brought attention to the fact that the threat of mines can be a powerful influence in settling international disputes, there were numerous indications which would lead to that general conclusion. ...the possible future use of aerial mines in settling international disputes should therefore not be overlooked. Mines can be dropped so as to produce a blockade effect without actually resulting in direct harm or bloodshed to the local populace. The economic effects of such a blockade might well assist settlement of disputes without combat." [Ref. 15, p. 275]

IV. DESIGN FOR A FUTURE MINE WARFARE FORCE

A. A BASIC DESIGN

The suggestions offered here are not intended as final plans or solutions. They are, at best, mere outlines or concepts of what might later be thoroughly studied and incorporated in future, long-range planning efforts. This paper has focused on the need for an effective mine warfare capability. The ability to develop and maintain this capability in the face of mounting pressures toward slimming the military budget requires a well thought-out plan. This plan must clearly incorporate cost effectiveness measures with measures designed toward the establishment of an effective mine warfare capability.

Perhaps the most efficient way to solve the problem of developing and maintaining an effective Mine Warfare Force, while at the same time remaining within fiscal restraints, would be to develop an expertise in pro-mining operations within existing units of the various surface, subsurface, and air arms of the Navy. This would require the development of equipment and techniques for use aboard all the various craft envisioned as participating in pro-mining operations.

Included with the increased dispersion of pro-mining expertise, would be the dispersion of capabilities of mine countermeasures and mine hunting. The present structure

of mine countermeasures of a balance between mine sweeping surface vessels and the airborne mine countermeasures technique (AMCM), could be expanded through the interspersion of various surface units within a task group equipped to act as control and support ships for an AMCM helicopter detachment. Furthermore, the forward deployment of the paraphernalia required to conduct an airborne mine countermeasures operation including trained crews and appropriate helicopters would greatly increase the Mine Force's ability to respond to a requirement in a timely fashion.

The dispersion of units capable of affecting pro-mining and mine clearing tasks as well as their other primary tasks, would serve the cause of furthering the capability of the Mine Force in numerous ways.

First, the deployment of mine warfare capabilities within the Fleet, and the resultant training and familiarization that must accompany such a move, should act as an effective advertisement for the merits of mine warfare. It is commonly known that sailors of any rank or rate tend to be the best salesmen for any system they become intimately involved in.

The second effect would be the expansion of the capabilities of Fleet units to perform integrated operations with our allied NATO nations, most of whom have long been active in concentrated mine warfare efforts. Along with this expanded capability to perform mine warfare operations,

would go the expanded personnel base of expertise that would be achieved in this field. A strong base of experienced personnel would, in turn, allow the Mine Warfare Force to choose from a larger community of personnel in the manning of its separate afloat units and shore-based staffs.

The third advantage of this plan is that it remains a possible alternative to the expansion of the role and expertise of mine warfare in the Navy while remaining within fiscal restraints. The cost of developing and maintaining an expanded Mine Warfare Force with the capability to deploy and clear mines exclusive of all other units, would be very difficult to sell in the present tight money climate. On the other hand, an expansion of capability through an integration of techniques and equipment among existing surface, air, and subsurface forces would be more reasonably accepted.

The fourth, and probably the most important aspect of the plan is the improved capability to wage mine warfare that would be available to the Fleet Commander. Mining would then become a viable first strike alternative in the event of an outbreak of hostilities, thereby bottling up parts of the enemy's units before they are deployed.

A plan such as the above, however, would fall short of its goal if the pro-mining capabilities were advanced without follow-on advances in the area of mine countermeasures. As stated previously, the generally accepted

tennets of international law require a matching countermining capability. A balanced expansion of expertise in both areas is required in order to insure that mining remaines a viable alternative.

Although this plan calls for an integration of promining and mine countermeasures activities within the present fleet forces as opposed to a separate Mine Force tasked with all mining activities, this is not intended to suggest that some sort of separate Mine Warfare Force organization is not needed. Indeed, the very nature of a separate staff activity tasked primarily with mine warfare activities lends itself to the current Navy trend of centralized functions. The several activities that might be labeled as housekeeping chores such as personnel training, mine maintenance, and mine planning can best be handled by some centralized organization devoted to such tasks.

One of the major chores that the Mine Warfare Force staff might be tasked with is the initial preparation and continuing update of mine plans for all maritime areas in support of Atlantic and Pacific Fleet Commanders. The expertise required in order to prepare and analyze such plans would remain within the Staff, and thus, a standardization of mine planning methodology and training could be controlled by this one centralized mine planning agency.

A centralized staff would also act as an agent to promote and intensify the liaison between fleet units and the research laboratories in support of test and evaluation

of new equipment and techniques. Since there would exist no mine development group as such, for the test and evaluation of equipment, the Mine Warfare Staff would need the appropriate authority to require submission of reports from units involved in the evaluation program.

Obviously, the centralizing of mine warfare expertise would insure the availability of a pool of experienced personnel who could assist fleet units in the training of personnel, and in the solving of maintenance problems. They would also provide inputs to the training centers for changes in methods and techniques, and in updating training in new equipment.

Finally, this centralized Mine Warfare Force staff would act as the prime mover in an effort to market mine warfare. Acting in this capacity, the Staff would promote mine warfare by developing various scenarios and contingency plans for the use of mines. More importantly, it would publicize the effect mine warfare could have on national defense policy and national political policy.

B. AREAS OF NEEDED CONCENTRATION

If the Mine Warfare Force and its associated mine warfare effort can be considered an essential element of the national security defense structure, then it must receive the attention and emphasis that it warrants. The Mine Warfare Force, as advocates of a strong mine warfare capability, must act as the driving force behind an effort to

advertise the importance of the need for this capability. The marketing effort needs to be improved within the Force as a means of implementing this campaign.

The marketing of mine warfare requires the exposure of facts and well-thought out scenarios in which the mine may play a part. The thrust for this effort must come from the Commander, Mine Warfare Force and be directed outward toward both higher and lower echelons within the Navy and the entire defense establishment. Precisely, the direction of this thrust must be in five directions to reach the vital areas of the defense structure that are most apt to affect a change in the status of mine warfare within that structure.

The three areas within the structure of the Defense Department that require attention in this marketing effort are as follows:

1. The various arms of the Navy not generally involved in mining operations but which are apt to have increasing requirements in mine warfare expertise as the mine becomes more effectively utilized. These areas include the naval air forces, submarine forces, and surface combatant forces.
2. The high-level planners within the organization of the Defense Department, who are apt to be making policy decisions that would greatly affect the Mine Force.

3. The various other services within the defense establishment that may become increasingly important in any design for a united command concept for an effective Mine Force. Included in this category, must be the Coast Guard and Merchant Marine Forces who are surely to be effected by any increase in mine warfare utilization.

Aside from the aforementioned areas of concentration within the Defense Department, two other communities must be considered as important targets of a concerted marketing effort. The first of these areas includes the legislators who are most apt to have some influence on the structure of the Mine Force and its future development. Members of the Armed Services Committees and Appropriations Committees are, perhaps, the most important members of this group.

Secondly, officials within the State Department who might be in the situation of negotiating treaties and agreements with other nations should have some exposure to the capabilities and limitations of the Mine Force. Also, this is perhaps the best area to present a strong argument for the mine as a weapon of far-reaching political incluence.

One final point that must be discussed in this section concerns the relation of the Force to the research and development efforts within the naval research community in

perfecting new technologies and techniques of mine warfare. It is only through a pronounced degree of effort in the area of research and development that truly important advances in the field can be made. Research and development therefore, deserves a high degree of attention and support from the mine warfare community. Only through a concerted effort in this area can our mine warfare technologies keep pace with our prospective enemy technologies.

Perhaps the importance of a strong research and development program can best be dramatized by quoting Mr. William P. Clements, Jr., the designate for the job of Deputy Secretary of Defense under Secretary Richardson. Mr. Clements states that research and development will receive "our first attention. There is nothing more important than expanding our technological base." [Ref. 21]

V. CONCLUDING REMARKS

Two points must be discussed briefly before this work can be considered complete. Both points are all-encompassing in nature, in that they do not apply exclusively to any specific area of mine warfare, nor to any one of the sections previously discussed in this paper. These points are general in nature, and therefore apply to mine warfare and this thesis in a general way.

The first point to consider has perhaps been hinted at throughout the thesis, that is, that mine warfare is a total system of techniques and experience, any part of which can not be considered alone as the only effort in mine warfare. As has been previously stated, a balance of pro-mining and mine countermeasures capabilities is necessary and required by international law. This therefore requires that any technological strides in the area of pro-mining, become meaningless unless mine countermeasures technologies are increased correspondingly. The same argument can, of course, be made for the reverse of this last statement. That is, that pro-mining technologies must keep pace with advances in countermeasures. This is reasonable when one considers the reality of weaponry and intelligence efforts in this area. Any advances in mine countermeasures technologies by any one country soon becomes a universal advance by other countries as intelligence

sources find out the intricacies of the advanced technology. The abilities in pro-mining, thus, must not lag far behind these advances in countermeasures, to prevent the mine from becoming an impotent weapon for the U.S. Navy.

Three other facets that are necessarily connected with mine warfare, and must also be considered as intricate parts of the total system, are training, logistics and maintenance. Each of these areas must be carefully planned and advanced along with the technologies of mine warfare. New techniques and methods, as well as changes due to new equipment, must be incorporated in training and maintenance programs, while supply support for new equipment must be carefully planned in advance so as to coincide with the equipment's introduction into the Force. In conjunction with this, the entire field of mine planning must also keep pace with an ever-changing effort to increase the capabilities of the Mine Force and, ultimately, mine warfare.

A second point to consider that relates to the section on the marketing effort of the Mine Warfare Force, is that any marketing effort must necessarily have lots of "moxie" and drive, but this must be controlled to keep mine warfare in the proper perspective. In selling the mine and mine warfare as being cost-effective and easily employed by various existing craft of all Services, it would be a

mistake to oversell the mine to the detriment of other programs and weapon systems.

It must be realized, and perhaps stressed by higher echelons of the Defense Structure, that neither mine warfare, not any other weapon system can be considered as other than a part of a total system of defense. Furthermore, no single portion of that system must be allowed to overshadow the other portions of the system.

APPENDIX A

NSAP Project Mine-9-73 Mine Warfare Force (MWF) Organization Policy Issues, Anticipated Extremes for Positions.

1. Time frame of concern for organizational horizon:

   MINIMUM: Desire quick action, to have impact within six months to a year. Focus on near-term problems and solutions. Delegate worries about long-term future to succeeding waves of incumbents who will be assigned under normal rotation.

   MAXIMUM: Take long view and address goals that will require extended and continuing effort over period of several years. Establish general strategy and initiate development of patterns for future courses of action.

2. Boundaries of operational coverage under MWF cognizance: ocean limits, rivers, protective gear on ships, etc.

   MINIMUM: Restrict responsibilities to open water beyond some fixed depth contour or fixed distance from shore, both for mining and countermeasures. No responsibility for protective measures on other naval or merchant ships.

MAXIMUM: Seek responsibility for mining and countermeasure activity in any locale, so long as water is the medium. Develop active, participative role in providing anti-mine protective measures for all types of vessels.

3. Ownership of facilities and vehicles (e.g., aircraft):

MINIMUM: Retain possession of minesweeping vessels only. Other vehicles are "borrowed" as needed. Use any necessary facilities on tenant basis. Provide mine servicing capability as requested, without proprietary rights in mine stocks.

MAXIMUM: Seek proprietary control of all vehicles assigned primarily or exclusively to mine warfare functions, including helicopters, aircraft, and minelayers, as well as minesweepers. Acquire and operate all necessary facilities. Negotiate basing rights as needed worldwide. Retain ownership of all mines.

4. Degree of influence of R&D and force levels:

MINIMUM: Accept what is given and "make do" as effectively as possible. Process standard requests through normal channels.

MAXIMUM: Set up special liaison links with R&D centers, such as NOL and NCSL. Seek representation on force level study groups. Lobby actively in OPNAV circles. Apoint local ad hoc study

groups and prepare position papers for dissemination upward and outward.

5. Level of PR activity and promotional effort:

   MINIMUM: Follow established routines. Seek no special attention.

   MAXIMUM: Mount aggressive campaigns to publicize mine warfare, aimed at a variety of audiences: general public, politicians, technical bodies, DOD. Exploit Vietnam experience. Establish strong PAO to build new, more glamorous image.

6. Expansion of mine warfare training and education:

   MINUMUM: Accept present course, with routing overview of curriculum and training practices.

   MAXIMUM: Retrieve control of Mine School. Invest in revitalization of curriculum. Boost student enrollment. Review OJT activities and strengthen where possible. Get Naval Academy and NPS to create new specialty programs in mine warfare.

7. Personnel opportunity - career attraction:

   MINIMUM: Follow present practice in recruiting and promoting.

   MAXIMUM: Initiate and maintain a vigorous campaign to build pride and esprit de corps. Increase pressure for billets and budget. Publicize opportunities. Create new awards. Inspire personnel to become salesmen for MWF.

8. Degree of control of services to LANT and PAC Fleets:

   MINIMUM: Maintain present relationships.

   MAXIMUM: Expand control over personnel engaged in mine service functions, particularly in PACFLT. Centralize all mine planning. Insist on authority to become model for worldwide Type Command.

9. Representation in OPNAV and System Commands:

   MINIMUM: Accept present mine desks as adequate.

   MAXIMUM: Insist on increased representation, in respect to both quantity and quality. Try to develop allegiance of such representation to MWF and get more aggressive pursuit of MWF welfare.

10. Overall posture - aggressive/submissive profile:

    MINIMUM: Try to do a good job, but don't make waves.

    MAXIMUM: Become a problem child if necessary, but make plenty of noise and get lots of attention. Subscribe to the rule that the squeaking wheel gets the grease. Maintain pressure for more of everything that could help MWF.

APPENDIX B [Ref. 1, p. 27]

Article from the Hague Convention of 1907, restricting mine warfare.

The articles listed below represent first formal insertion of mine warfare restrictions into international law. They were derived during the Hague Convention of 1907.

Art. 1 It is forbidden:

(1) to lay unanchored automatic contact mines, unless they are so constructed as to become harmless one hour at most after those who have laid them have lost control over them;

(2) to lay automatic contact mines which do not become harmless as soon as they have broken loose from their moorings;

(3) to use torpedoes which do not become harmless after they have missed their mark.

Art. 2 It is forbidden to lay automatic contact mines off the coasts and ports of the enemy, with the sole object of intercepting commercial navigation.

Art. 3 When anchored contact mines are employed, every possible precaution must be taken for the security of peaceful navigation.

The belligerents undertake to provide, as far as possible, for these mines becoming harmless after a limited time has elapsed, and, when the mines cease to be under observation, to notify the danger zones as military exigencies permit, by a notice to mariners, which must also be communicated to the governments through the diplomatic channel.

Art. 4 Neutral powers which lay automatic contact mines off their coasts must observe the same rules and take the same precautions as are imposed on belligerents.

The neutral power must give notice to mariners in advance of the places where automatic contact mines have been laid. This notice must be communicated at once to the governments through the diplomatic channel.

Art. 5 At the close of the war, the contracting powers undertake to do their utmost to remove the mines which they have laid, each power removing his own mines.

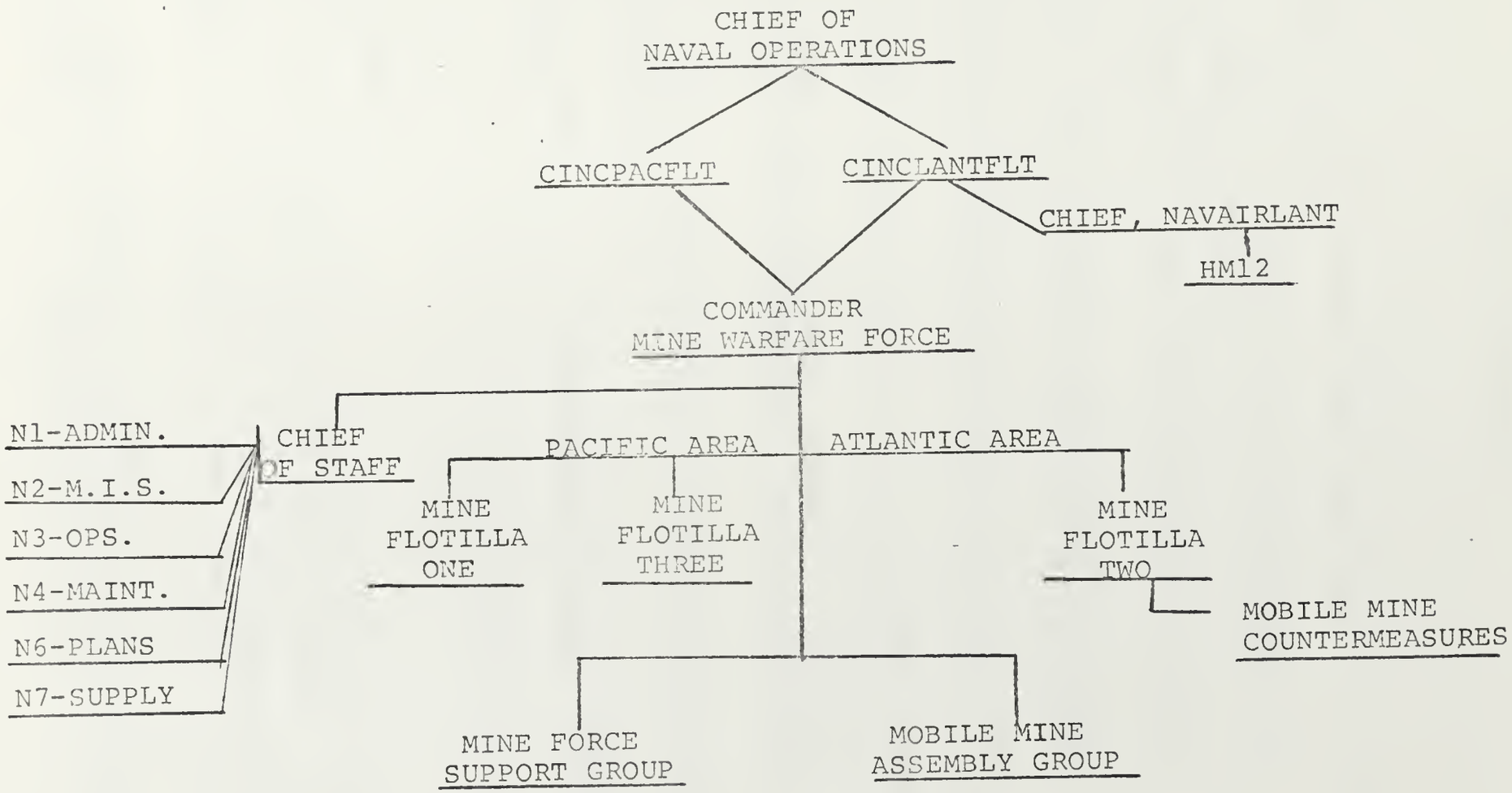
As regards anchored automatic contact mines laid by one of the belligerents off the coasts of the other, their position must be notified to the other party by the power which laid them, and each power must proceed with the least delay possible to remove the mines in its own waters.

Art. 6 The contracting powers which do not at present own perfected mines of the description contemplated in the present convention, and which, consequently, could not at present carry out the rules laid down in Articles 2 and 3, undertake to convert the material of their mines as soon as possible, so as to bring it into conformity with the foregoing requirements.

APPENDIX C

MINE WARFARE FORCE

ORGANIZATION CHART



LIST OF REFERENCES

Books

1. Belknap, R.S., The Yankee Mining Squadron, U.S. Naval Institute, 1920.

2. Duncan, Robert C., Americas Use of Sea Mines, U.S. Naval Ordnance Laboratory, 1962.

3. Low, Archibald M., Mine and Countermine, Sheridan House, 1940.

4. Mitchell, Don G., Top Man; Reflections of a Chief Executive, American Management Association, 1970.

5. Morison, S.E., History of the U.S. Navy Operations in World War Two, Little, Brown, 1947.

6. Morgenstern, Oskar, The Question of National Defense, Random House, 1959.

7. Newman, William H. and Logan, James P., Strategy, Policy, and Central Management, South-Western Publishing Co., 1971.

8. Smith, Mark E., III, and Johns, Claude, J., Jr., eds., American Defense Policy, 2d ed., The Johns Hopkins Press, 1968.

9. Steiner, George A., Top Management Planning, MacMillan Co., 1969.

10. Turner, John F., Service Most Silent, Harrap, 1955.

Technical Reports

11. Bureau of Naval Weapons, Operational Characteristics of U.S. Naval Mines, NAVWEPS OP-2637, January, 1963.

12. Franklin Institute, Report NAVWAG-34, A Study of Mine Warfare, vol. II, Center for Naval Analysis, October, 1964.

13. Naval Ordnance Laboratory, NOLTR 64-64, Proceedings of the Seventh Conference on: The Naval Minefield: Its Objectives, vol. I, compiled by B.P. Ramsey, U.S. Naval Ordnance Laboratory, 1964.

14. Office of Naval Research, Airborne Mine Contermeasure Study Report (U), Mine Advisory Committee, 19 September 1972. (SECRET document).

15. Office of Naval Research, Report on Project NIMROD, The Present and Future Role of the Mine in Naval Warfare (U), vols. I, II, Mine Advisory Committee, 15 January 1970. (SECRET document).

Periodicals

16. Alger, John, Maj. AUS (ret.), "The Objective Was a Volunteer Army", United States Naval Institute Proceedings, vol. 96, no. 2/804, p. 62-68, February 1970.

17. Armstrong, Hamilton Fish, "Isolated America," Foreign Affairs, vol. 51, no. 1, p. 1-10, October 1972.

18. Cohen, Paul, "The Erosion of Surface Naval Poser," Foreign Affairs, vol. 49, no. 2, p. 330-341 January 1971.

19. Hoffmann, Stanley, "Weighing the Balance of Power," Foreign Affairs, vol. 50, no. 4, p. 618-643, July 1972.

20. Janowitz, Morris, "Volunteer Armed Forces and Military Purpose," Foreign Affairs, vol. 50, no. 3, p. 427-443, April 1972.

21. "Names and Faces," Business Week, no. 2264, p. 40, 27 January 1973.

22. Searight, Murland W., Cdr., USN, "Prepare to Sweep Mines," United States Naval Institute Proceedings, vol. 96, no. 1/803, p. 54-59, January 1970.

23. Shulman, Marshall D., "What Does Security Mean Today?", Foreign Affairs, vol. 49, no. 4, p. 607-618, July 1971.

24. Ullman, Richard H., "No First Use of Nuclear Weapons", Foreign Affairs, vol. 50, no. 4, p. 669-683, July 1972.

Letters, Memorandums, Instructions, and Notices

25. Commander Mine Force, U.S. Atlantic Fleet UNCLASSIFIED Instruction COMINELANTINST 5450.1, Subject: Statement of Missions, Tasks, and Functions for Mine Force Support Group, Atlantic, 20 May 1970.

26. Chief of Staff, Mine Warfare Force Staff UNCLASSIFIED Memorandum to N1-7, Mine Warfare Force Staff, Subject: Force Improvement Program, 11 October 1972.

27. N-33, Mine Warfare Force Staff CONFIDENTIAL Memorandum to Commander, Mine Warfare Force, Subject: Control of Minemen and Mine Maintenance Program, 8 November 1972.

28. N-33, Mine Warfare Force Staff CONFIDENTIAL, Memorandum to Commander, Mine Warfare Force, Subject: Control of Minemen and Mine Maintenance Program, 21 November, 1972.

29. N-41, Mine Warfare Force Staff CONFIDENTIAL Notice (Ser. 9020) to Mine Warfare Force, Subject: The New Generation MCM Platform.

30. Odle, Dr. John W., UNCLASSIFIED Memorandum to NSAP Task Mine-9-73 Files, Subject: General Project Description, 2 January 1972.

31. Odle, Dr. John W., UNCLASSIFIED Memorandum to NSAP Task Mine-9-73 Files, Subject: Trip Report of Visit to MWF Headquarters, Charleston, S.C., 12-14 Dec. 1972, 3 January 1973.

32. Odle, Dr. John W., UNCLASSIFIED Memorandum to NSAP Task Mine-9-73 Files, Subject: Inputs from Mine Warfare Sections in OPNAV and NAVMAT for MWF Organization Study, 4 January 1973.

33. Staff, Supreme Allied Commander, South East Asia UNCLASSIFIED Letter to Colonel Younger, Headquarters, Army Air Force, Subject: Mine Warfare, September 1944.

Interviews (chronologically listed)

34. Professor Carl E. Menneken, Formerly Dean of Research, United States Naval Postgraduate School, and Chairman of the Mine Advisory Committee for the National Academy of Sciences, interviewed at the Naval Postgraduate School, Monterey, California, on 12 December 1972.

35. Deputy Commander, Mine Warfare Force/Commander, Mine Flotilla Three and his Staff, interviewed at the Naval Base, Long Beach, California, on 11 and 12 January 1973.

36. Rear Admiral James A. Dare, USN(ret.) former Commander, Mine Warfare Force, interviewed at the Naval Postgraduate School, Monterey, California, on 15 and 16 January 1973.

INITIAL DISTRIBUTION LIST

		No. Copies
1.	Defense Documentation Center Cameron Station Alexandria, Virginia 22314	2
2.	Library, Code 0212 Naval Postgraduate School Monterey, California 93940	2
3.	Professor J. W. Creighton, Code 55CF Department of Operations Research and Administrative Sciences Naval Postgraduate School Monterey, California 93940	1
4.	LT William A. Gaffney 10 Glengarry Road Winchester, Massachusetts 01890	1
5.	Commander, Mine Warfare Force Naval Base, Charleston, South Carolina 29408	1
6.	Professor C. E. Menneken, Code 52MK Department of Electrical Engineering Naval Postgraduate School Monterey, California 93940	1
7.	Commander, Naval Communications Command Naval Communications Headquarters 4401 Massachusetts Avenue, N.W. Washington, D.C. 20390	1
8.	Library, Code 55 Naval Postgraduate School Monterey, CA 93940	1

Security Classification

DOCUMENT CONTROL DATA - R & D

(Security classification of title, body of abstract and indexing annotation must be entered when the overall report is classified)

ORIGINATING ACTIVITY (Corporate author)

Naval Postgraduate School
Monterey, California 93940

2a. REPORT SECURITY CLASSIFICATION

2b. GROUP

REPORT TITLE

Policy Considerations for the Improvement of the United States Navy Mine Warfare Capability

DESCRIPTIVE NOTES (Type of report and, inclusive dates)

Master's Thesis; March 1973

AUTHOR(S) (First name, middle initial, last name)

William Alan Gaffney

REPORT DATE	7a. TOTAL NO. OF PAGES	7b. NO. OF REFS
March 1973	60	36

8a. CONTRACT OR GRANT NO.	9a. ORIGINATOR'S REPORT NUMBER(S)
b. PROJECT NO.	
c.	9b. OTHER REPORT NO(S) (Any other numbers that may be assigned this report)
d.	

10. DISTRIBUTION STATEMENT

Approved for public release; distribution unlimited.

11. SUPPLEMENTARY NOTES	12. SPONSORING MILITARY ACTIVITY
	Naval Postgraduate School Monterey, California 93940

13. ABSTRACT

The general purpose of the paper is to indicate the importance of the role of mine warfare in supporting the nation's defense policy and, ultimately, the nation's political policy. The basic problem, a lack of attention and emphasis of mine warfare on the part of persons in positions of decision in the defense establishment, is treated in the opening sections as a prelude to describe the need for such a paper.

Future scenarios for mine warfare employment are developed to illustrate the importance of the mine and some of the possible areas where it may be used. This point is further discussed in relation to the mine's role as a political weapon as well as that of a strategic and tactical weapon. This line of thought is expanded through a discussion of the weapon's value as a deterrent and as a defensive weapon.

Finally, a design is offered for a future Mine Force with a much broader range of capabilities and exposure to Fleet activities. This section includes suggestions as to the reasons for the design, and beyond that, the areas that require emphasis to give the mine's capabilities the needed exposure to the proper echelons of the defense establishment.

DD FORM 1 NOV 68 1473 (PAGE 1)

S/N 0101-807-6811

Security Classification

A-31408

KEY WORDS	LINK A		LINK B		LINK C	
	ROLE	WT	ROLE	WT	ROLE	WT
mine warfare						
mine planning						
mine countermeasures						
pro-mining						
airborne mine countermeasures						
deterrence						
strategic weapon						